

# **New York and Pennsylvania Severe Weather Awareness Week April 24<sup>th</sup> to April 30<sup>th</sup>, 2016**

## **Flash Flooding and River Flooding**

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Binghamton NY



# Introduction to Severe Weather Awareness Week 2016 Floods

- What are the different types of floods?
- What causes flash flooding?
- Flash Flood Safety
- Historical Floods
- Record Flood Stages



# Types of Flooding

Central New York and Northeast PA are very prone to flooding.  
Listed below are the 3 most common types of flooding and their definitions.  
However, the most deadly type of flooding is flash flooding.

- **Urban Flooding** - Takes less rainfall to cause flooding. Causes ponding of water on roads and low-lying areas.
- **Flash Flooding** - Flooding on small streams. Responds in less than 6 hours.
- **River Flooding** - Flooding on larger rivers and streams. Responds in greater than 6 hours.

# Slow-Moving Thunderstorms often produce flash floods



On a daily basis the sun warms the surface. This causes air to rise up and along the terrain. If conditions are right, a cloud will form above the terrain. If the environmental conditions are right, thunderstorms will develop. Thunderstorms are capable of producing heavy rainfall.



Sometimes we have weak winds aloft and showers become stationary along the terrain. In these situations storms can create downpours for hours. This type of environment creates dangerous flash flooding.

Penn Yan, NY 2014



This type of event usually occurs over Central New York and Northeast Pennsylvania during the spring, summer and early fall.



# Flash Flood Safety

Flash Flooding can occur with little to no warning

## Create a Communications Plan

It is very important during an emergency to communicate with your family and friends. Make a phone tree. Communication helps keep your mind at ease especially when a natural disaster occurs.



## Create an Emergency Kit

It is good practice to have enough food and water to last you and your family for three days when an emergency strikes. Also, keep a first aid kit in case someone gets hurt along with a flashlight. This kit should have foods that do not need refrigeration and are easy to prepare. Your kit should also have a battery powered radio along with extra batteries to remain informed.



# Flash Flood Safety

Always have a plan! Know what to do and where to go!!!

- Always stay informed
- Obey evacuation orders
- Practice electrical safety
- Plan for pets



- Turn around, don't drown!
- Only two feet of water will move most vehicles
- Six inches of water will knock you off your feet
- Stay away from creeks and ditches



- Avoid flood waters
- Avoid disaster areas
- Wait for the "All Clear" before returning to your homes and businesses.



# Historical Local Floods





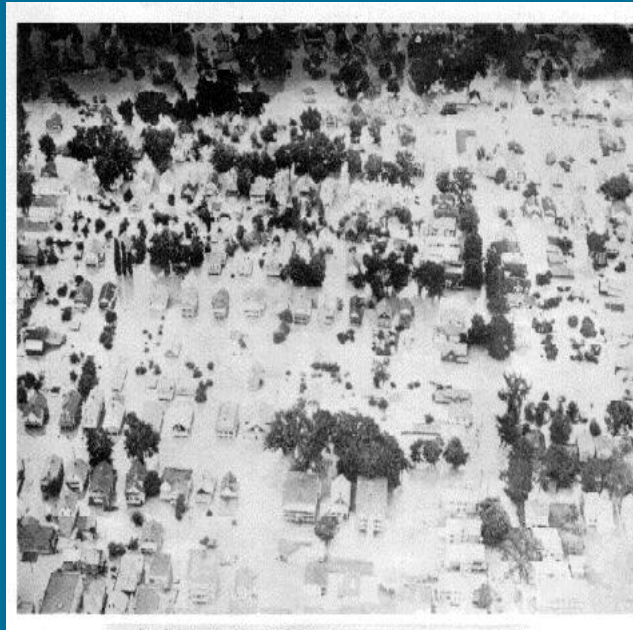
# Flooding

Elmira NY after Agnes 1972



An airview of a portion of Elmira's Southside, June 23, 1972

Binghamton, NY  
July 8<sup>th</sup> 1935



All parts of the state have been hit with flash flooding and river flooding.

Some have been statewide floods

- July 1935
- Agnes 1972
- Jan 1996
- Ivan 2004
- June 2006
- September 2011
- And many others

September 2011



Ivan, September 2004



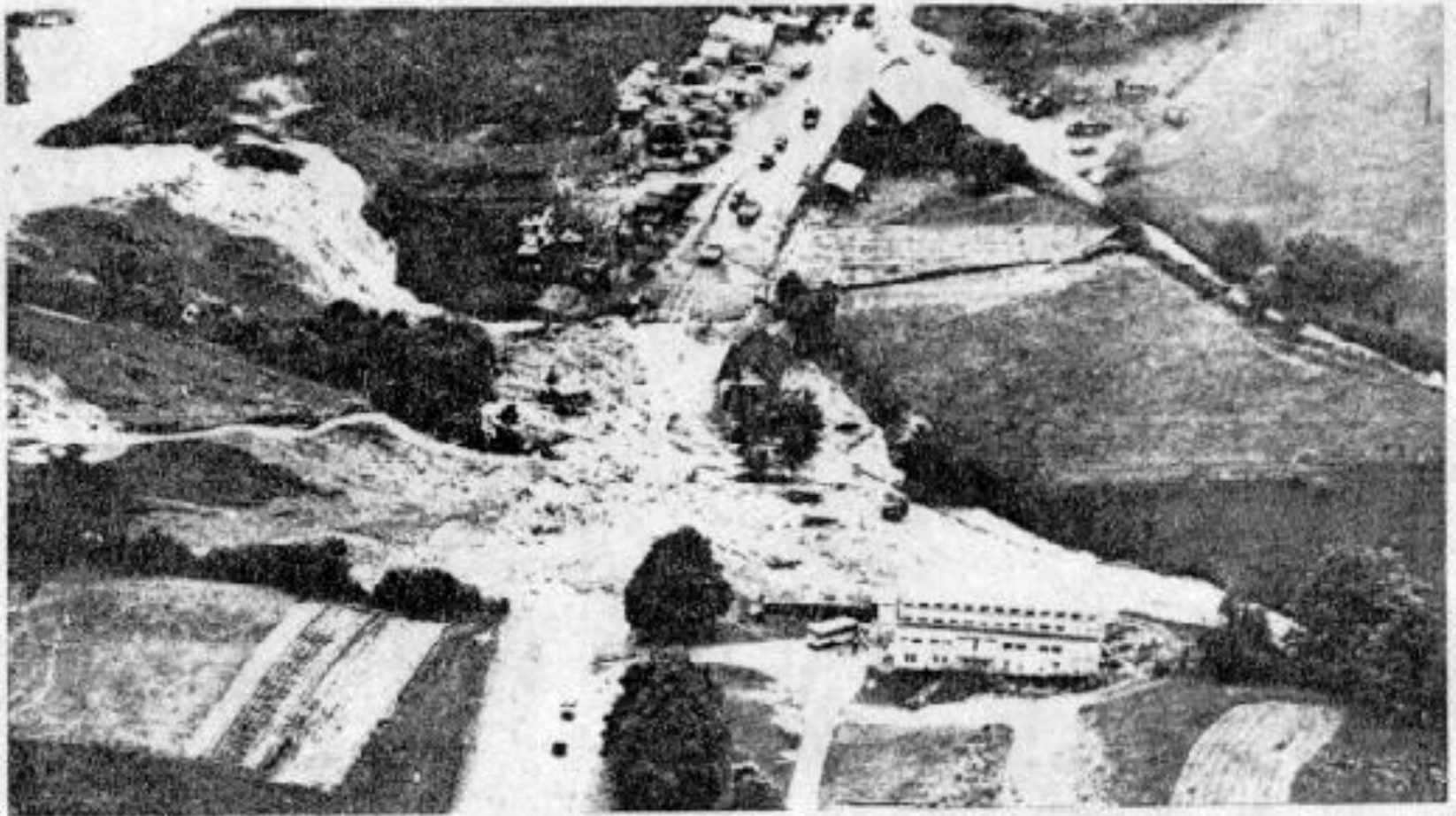


# River Flooding: Binghamton, NY 1935



Chenango River and Front Street, Binghamton, N. Y.  
Water backing in through Valley Street and into the First Ward

# 1935 River Flooding Cortland – Marathon NY



Wild rushing waters played havoc with the Cortland-Marathon road



# Wilke-Barre, PA June 1972





# Tioga County, April 2005



# Broome County, NY June 2006 Flood



- 9 dead in central NY and northeast PA.
- 1 billion dollars in damages.
- State of Emergencies in many counties.
- Record flooding on the Susquehanna River in New York State.



Taken by Michael R. Head in Binghamton, NY.



# Delaware County Flash Flood

## June 19<sup>th</sup>, 2007

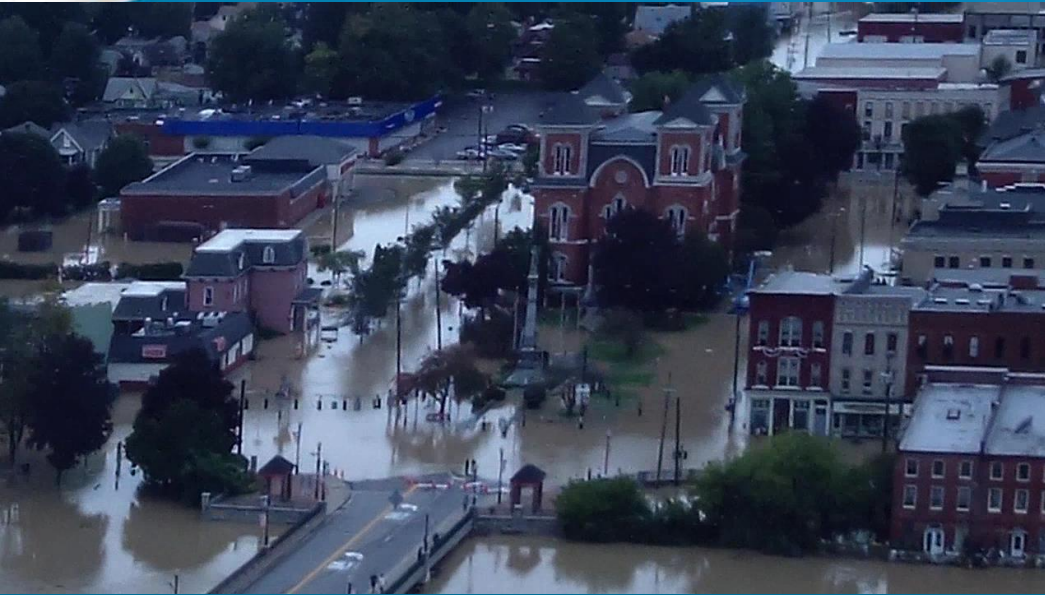
- 4 dead.
- 10 million dollars in damage.
- Route 206 destroyed between Roscoe and Downsville
- 4 homes completely washed away.
- 37 severely homes were damaged or destroyed.
- Up to 11 inches rain fell in about 3 hours.



Photo by Dave Morford National Weather Binghamton, NY June 22, 2007



# September 2011 Flood Tioga and Broome Counties, New York



- 0 dead in Central New York.
- 1 billion dollars in damages.
- State of Emergencies in many counties.
- Record flooding on the Susquehanna River in New York State.




# September 2011 Flood

## Bradford and Wyoming Counties, Pennsylvania

Athens, PA





The most recent major river flood events occurred in 2006 and 2011 over central New York. These events set many new records.

These floods showed the full force of mother nature.

The next two pages show exactly how high the rivers rose and when the last record was set.





# June 2006

Flood stages along the North Branch of the Susquehanna River  
(\*orange denotes new record)

RIVER	GAGE	JUNE 06 CREST	RECORD	APR '05	IVAN '04
CHENANGO	SHERBURNE	11.35	11.2 (1914)	10.78	N/A
CHENANGO	GREENE	21.16	22.0 (1935)	18.67	N/A
SUSQUEHANNA	UNADILLA	17.72	16.6 (1936)	13.67	N/A
SUSQUEHANNA	BAINBRIDGE	27.05	23.1 (1914)	20.47	15.09
SUSQUEHANNA	CONKLIN	25.02	20.83 (1948)	18.08	19.01
SUSQUEHANNA	VESTAL	33.66	30.5 (1936)	28.87	25.98
SUSQUEHANNA	WAVERLY	22.52	21.4 (1936)	20.88	18.80
SUSQUEHANNA	TOWANDA	20.83	33.43 (1972)	23.05	22.27
SUSQUEHANNA	MESHOPPEN	32.78	43.51 (1972)	34.06	35.27
SUSQUEHANNA	WILKES-BARRE	34.09	40.91 (1972)	30.94	34.96

# September 2011

Flood stages along the North Branch of the Susquehanna River  
(\*orange denotes new record)

RIVER	GAGE	SEPT '11	RECORD	JUNE '06	APR '05
CHENANGO	SHERBURNE	11.64	11.35 (2006)	11.35	10.78
CHENANGO	GREENE	21.09	22.0 (1935)	21.16	18.67
UNADILLA	ROCKDALE	14.22	13.96 (2006)	13.96	11.83
SUSQUEHANNA	UNADILLA	16.34	17.72 (2006)	17.72	13.67
SUSQUEHANNA	BAINBRIDGE	26.20	27.05 (2006)	27.05	20.47
SUSQUEHANNA	CONKLIN	23.94	25.02 (2006)	25.02	18.08
SUSQUEHANNA	VESTAL	35.26	33.66 (2006)	33.66	28.87
SUSQUEHANNA	WAVERLY	26.67	22.52 (2006)	22.52	20.88
SUSQUEHANNA	OWEGO	39.62	35.90 (2006)	35.90	33.15
SUSQUEHANNA	BINGHAMTON	25.71	25.00 (2006)	25.00	N/A

# WATCH vs. WARNING



**CAUTION**

**Watch the Sky**

## Watch- “Stand-by”

Conditions are favorable for severe weather in or near the watch area. Watches are issued for tornadoes, severe thunderstorms and flash floods. Issued by the Storm Prediction Center



**DANGER**

**Take Cover Now**

## Warning- “Activated”

The severe weather event is imminent or occurring in the warned area. Warnings are issued for tornadoes, severe thunderstorms, flash floods and river flooding. Issued by NWS Binghamton for central New York and northeast Pennsylvania.